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ABSTRACT OF THE DISCLOSURE

A suspension system for a motorcycle, comprising a motorcycle main frame, a swing arm pivotally mounted to the motorcycle main frame about a pivot axis, and an air-bag suspension system. The air-bag suspension system includes at least one air-bag constructed of an elastomeric material. The air-bag is housed within a housing assembly and is secured at one end to a piston located within the housing assembly and at its other end to an upper plate or end cap of the housing assembly. The housing assembly is attached to a shock absorber, and the shock absorber is attached at its forward end to the cross member plate of the motorcycle main frame and is pivotally attached at its rearward end to the lower transverse cross member of the swing arm.